

# **EP-2126J-S3S3**

## **Epica Expansion Chassis**

## **User Manual**

**Revision 1.2**

P/N: PW0020000000304

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## Chapter 1 Introduction



### The EP-2126J-S3S3

The Epica **EP-2126J-S3S3** is Proware's most versatile SAS/SATA II Disk Expansion system, ideal for midrange and high capacity storage in Windows environment. Based on 3Gb SAS Channel host interfaces, the EP-2126J-S3S3 supports the choice of SAS (Serial Attached SCSI), and SATA II (Serial ATA) drive configurations to deliver a system bandwidth of up to 1,200 MB/sec.

The ability to mix SAS and SATA drives allows the EP-2126J-S3S3 to be used for a range of applications that require different price/performance characteristics. Cost-effective SATA drives can be selected for capacity orientated storage such as disk-to-disk backup and storage of reference data. Higher specification SAS drives can be employed for I/O intensive applications including transactional databases. Hosting multiple tiers of data in an EP-2126J-S3S3 configuration gives organizations the flexibility to meet both their technical requirements and budgetary constraints with a single unified solution.

## 1.1 Features

- **Modular Design With Common Parts**
  - Inventory control efficiency
  - Cost-saving benefits to the end-user
- **Power Supply**
  - Power Supply and cooling system contained in 1 module for efficient cooling
  - 300W power supplies to meet the future HDD power consumption
- **Enclosure**
  - Modules are interchangeable with other Epica products
  - Hardware expansion slots keep you up-to-date on the latest technologies
  - Incorporates a cableless design for maximum signal integrity
- **SES**
  - Utilizes industry-standard SCSI Enclosure Services to monitor enclosure and disk environmental conditions

## 1.2 Technical Specifications

<b>Model</b>	EP-2126J-S3S3
<b>Form Factor</b>	2U 19" rackmount chassis
<b>Host Bus Interface</b>	Two 4 Lane SAS Up to 300 MB/s per Lane
<b>Disk Bus Interface</b>	3Gb SAS SAS / SATA II
<b>Backplane</b>	3Gb SAS
<b># of Hot Swap Trays</b>	12
<b>Tray Lock</b>	Yes, with Lock Indicator
<b>Disk Status Indicator</b>	Access LED and Fail LED with 170°C view
<b>Capacity</b>	4.8TB (at 400GB SAS drive) 24TB (at 2TB SATA drive)
<b>Enclosure Monitoring (SES)</b>	In Band SES via SAS
<b># of PS/Fan Modules</b>	Two (2) Redundant Power Supply 300W
<b># of Fans per Module</b>	One (1) per Module; Multi-speed
<b>Max. Air Flow</b>	160 CFM
<b>Power Status Indicator</b>	Yes
<b>Fan Status Indicator</b>	Yes
<b>Power Requirements</b>	AC 90V ~ 264V Full Range 6A ~ 3A, 50Hz ~ 60Hz
<b>Relative Humidity</b>	10% ~ 85% Non-condensing
<b>Operating Temperature</b>	10°C ~ 40°C (50°F ~ 104°F )
<b>Physical Dimension</b>	460(L) x 482(W) x 88(H) mm
<b>Weight (Without Disk)</b>	14 Kg

### 1.3 Unpacking the JBOD Subsystem

The package contains the following items:

- JBOD Expansion Chassis
- Two power cords
- One serial cable (phone-jack to DB9)
- One external Mini SAS cable SFF-8088 to SFF-8088
- Installation Reference Guide
- Spare screws, etc.



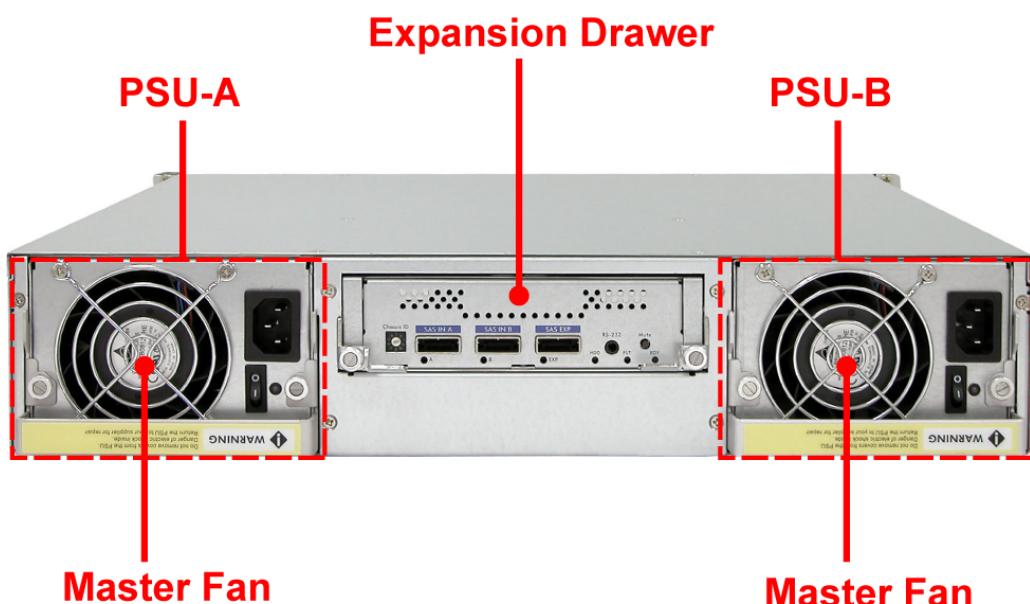
## 1.4 Identifying Parts of the EP-2126J-S3S3

The illustrations below identify the various parts of the expansion chassis.

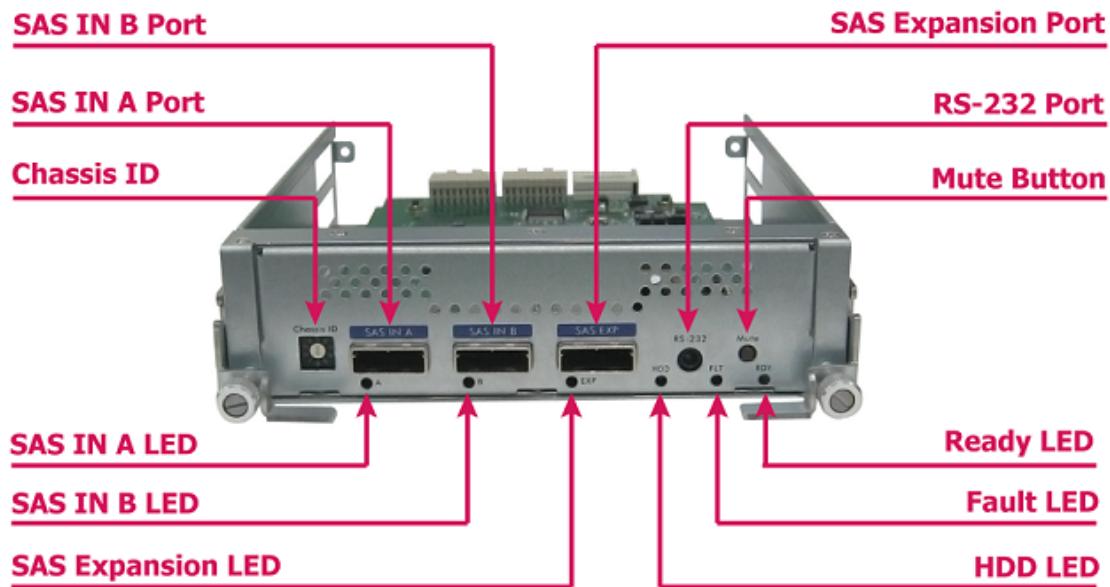
### 1.4.1 Front View



### 1.4.2 Rear View



### 1.4.3 Expansion Drawer



#### Parts of Expansion Drawer:

**SAS IN A Port**: First SAS IN Port for SAS cable connection from SAS HBA or other Expansion Chassis.

**SAS IN B Port**: Second SAS IN Port for SAS cable connection from SAS HBA or other Expansion Chassis.

**Chassis ID Dial**: Used for assigning the Expansion Chassis ID Number.

**SAS Expansion Port**: SAS Out Port for connecting SAS cable to other expansion chassis.

**RS-232 Port**: Used for upgrading the Firmware of Expansion Chassis.

**Mute Button**: Used for silencing the alarm beeper.

**SAS IN A LED**: Green indicates SAS connection in SAS IN A Port.

**SAS IN B LED**: Green indicates SAS connection in SAS IN B Port.

**SAS Expansion LED**: Green indicates SAS connection in SAS Expansion Port.

**Ready LED**: Green indicates Expansion Chassis is Powered On and Ready.

**Fault LED**: Red indicates there is problem within the Expansion Chassis.

**HDD LED**: Green indicates activity on the disk drives.

## 1.5 Power Supply / Fan Module

Every EP-2126J-S3S3 contains **two 300W Power Supply / Fan Modules**. All PSFMs are inserted into the rear of the chassis.



### 1.5.1 PSFM Panel



The Power Supply/Fan Module panel has: Power On/Off Switch, the AC Inlet Plug, and a Power On/Fail Indicator showing the Power Status LED, indicating ready or fail.

Each fan within a PSFM is powered independently of the power supply within the same PSFM. So if the power supply of a PSFM fails, the fan associated with that PSFM will continue to operate and cool the enclosure.

### 1.5.2 Power Supply Module LED



When the power cord connected from main power source is inserted to the AC Power Inlet, the power status LED becomes **RED**. When the switch of the PSFM is turned on, the LED will turn **GREEN**. When the Power On/Fail LED is **GREEN**, the PSFM is functioning normally.

### 1.5.3 Fan of PSFM

Each PSFM has 1 fan located beside the PSFM panel.



In the LCD display, Fan of Power Supply Unit A is shown as "MF/PSU-A" and Fan of Power Supply Unit B is shown as "MF/PSU-B".

## 1.6 LCD Display Panel



### 1.6.1 LCD Panel LED



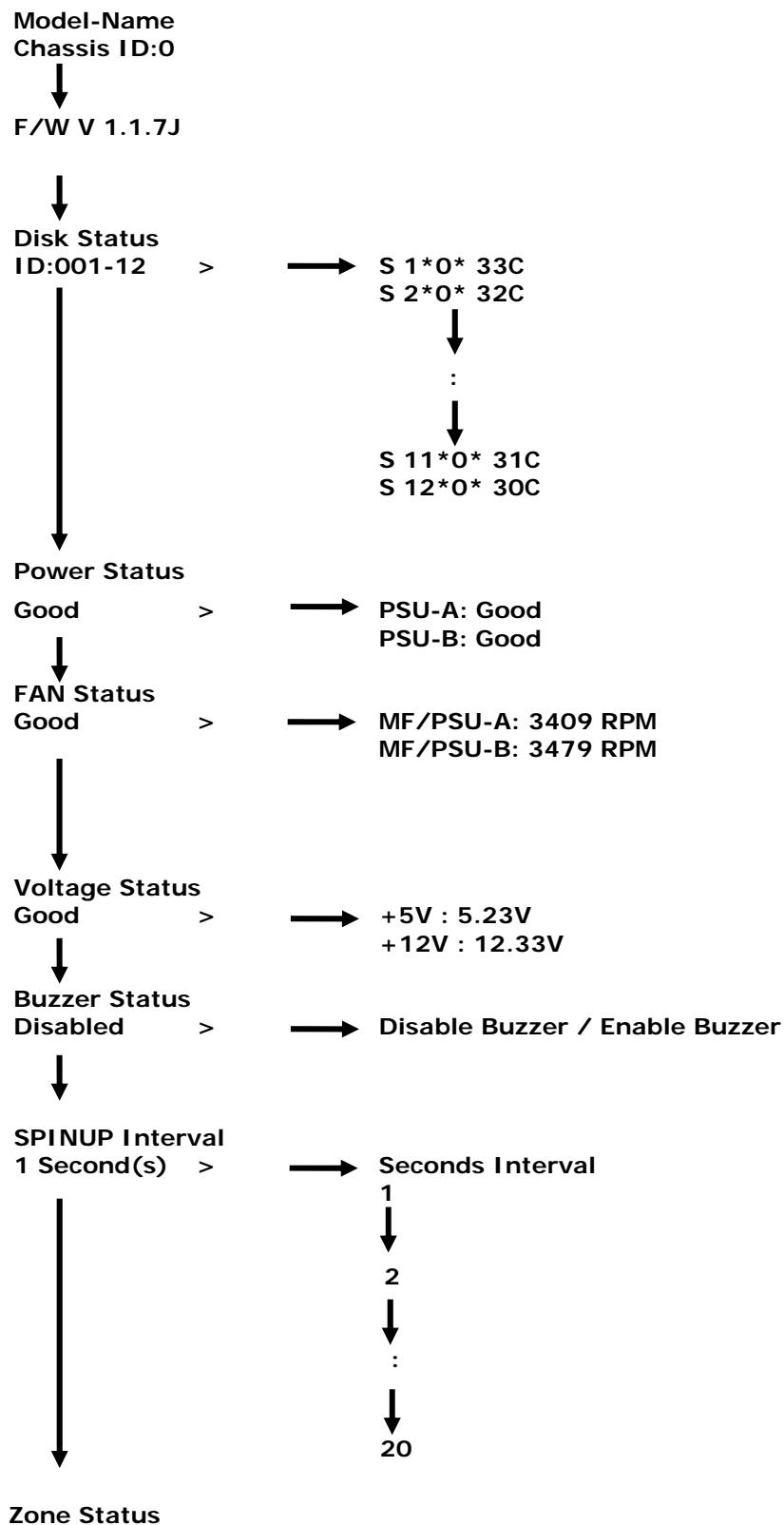
Parts	Function
Power LED	Green indicates power is ON.
Power Fail LED	If one of the redundant power supply unit fails, this LED will turn to RED and alarm will sound.
Fan Fail LED	Turn RED when fan 1 or 2 fails, or speed is lower than 2000 RPM.
Over Temperature LED	If system temperature is over 70°C or disk temperatures exceed 55°C, the Over Temperature LED will turn RED and alarm will sound.
Voltage Warning LED	An alarm will sound if detected voltage in the controller is abnormal and LED will turn RED.

### 1.6.2 LCD Panel Function Buttons



Parts	Function
Up and Down Arrow buttons	Use the Up or Down arrow keys to go through the information on the LCD screen. This is also used to move between each menu.
Select button	This is used to enter the option you have selected.
Exit button	Press this button to return to the previous menu.

### 1.6.3 Menu Diagram



## 1.7 Drive Carrier Module

The Drive Carrier Module houses a 3.5 inch hard disk drive. It is designed for maximum airflow and incorporates a carrier locking mechanism to prevent unauthorized access to the HDD.

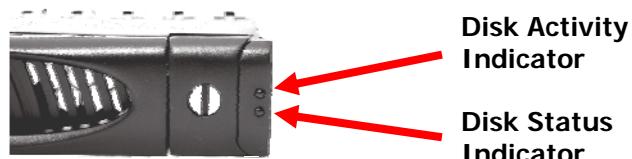


### 1.7.1 Disk Drive Status Indicators

Every Drive Carrier has 2 status indicator lights. One indicator light is used for Power On/Error. When this light is **GREEN** the power is on and everything is functioning normally. When the Power On/Error light is **RED**, then an error has happened that requires the user's attention.

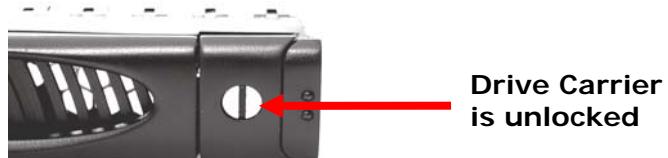
The other status indicator light is the hard disk drive access light. When the hard disk drive is being accessed, this light will flash **BLUE**.

In addition, both indicator lights are viewable within a 170° arc.



### 1.7.2 Drive Carrier Lock Indicator

Every Drive Carrier is lockable and is fitted with a lock indicator to indicate whether or not the carrier is locked into the chassis or not. Each carrier is also fitted with an ergonomic handle for easy carrier removal.



When the Lock Groove is vertical, then the Drive Carrier is unlocked.



When the Lock Groove is horizontal, this indicates that the Drive Carrier is locked.

Lock and unlock the Drive Carriers by using a flat-head screw driver.

## Chapter 2 Installation of Expansion Chassis

### 2.1 Installing Hard Drives

The expansion chassis supports hot-swapping allowing you to install or replace a hard drive while the subsystem is running.

- a. Press Make sure the Lock Groove is in unlocked position. Press the Carrier Open button and the Drive Carrier handle will flip open.



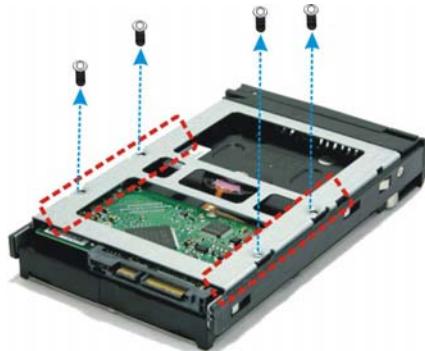
- b. Pull out an empty disk tray. Pull the handle outwards to remove the carrier from the enclosure.



- c. Place the hard drive in the disk tray. Make sure the holes of the disk tray align with the holes of the hard drive.



d. Install the mounting screws on the bottom part to secure the drive in the disk tray.



e. Slide the tray into a slot.



f. Close the handle until you hear the latch click into place.



## 2.2 Setting the DIP Switch of Expansion Drawer

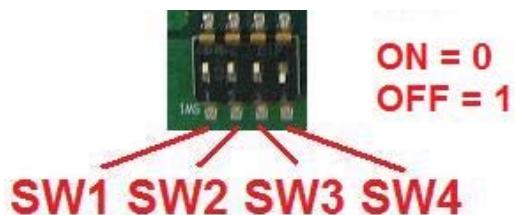
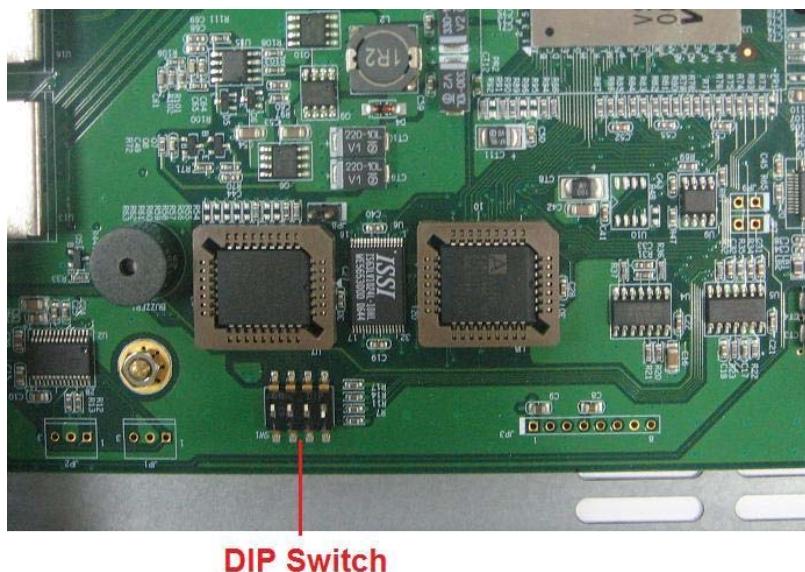


**NOTE: Depending on the SAS RAID card used in the Host Server, the DIP switch must be set according to the tables below.**

DIP Switch Setting	SAS RAID Card	Note
0 0 0 0	Dell / HighPoint	
0 0 0 1	AMCC	
0 0 1 0	Intel	Reserved for future use.
0 0 1 1	Areca	
0 1 0 0	Adaptec	
0 1 0 1	ATTO	
0 1 1 0	LSI (External ports)	
0 1 1 1	LSI (Internal ports)	

**Steps:**

1. Remove the Expansion Drawer from the enclosure.
2. Configure the DIP Switch in the JBOD controller to the appropriate setting.  
Note that 0 is "ON" and 1 is "OFF".



3. Reinsert the Expansion Drawer into the enclosure.

## 2.3 Connecting the EP-2126J-S3S3 to Host Server or other Expansion Chassis

### Steps:

1. Prepare the Expansion Chassis.
2. Install the Expansion Chassis near the Host Server where it will be connected.
3. Connect one end of external SAS cable to the SAS RAID card on the Host Server and the other end to the SAS cable to SAS IN A Port of the Expansion Chassis.



**NOTE: When connecting additional Expansion Chassis, connect the external SAS cable from SAS Expansion port of the last Expansion Chassis to the SAS IN port of the additional Expansion Chassis. Then set the Chassis ID Dial on the additional Expansion Chassis.**

Chassis ID	Disk ID Range	Used for
0	1 ~ 12	First JBOD Expansion Chassis
1	1 ~ 12	Second JBOD Expansion Chassis
2	1 ~ 12	Third JBOD Expansion Chassis
3	1 ~ 12	Fourth JBOD Expansion Chassis
4	1 ~ 12	Fifth JBOD Expansion Chassis
5	1 ~ 12	Sixth JBOD Expansion Chassis
6	1 ~ 12	Seventh JBOD Expansion Chassis
7	1 ~ 12	Eighth JBOD Expansion Chassis

4. Connect two power cords to the AC Power Inlet of the two Power Supply Fan Modules. Note that the Power-On LED indicator will turn red.
5. Turn on the Power Switch of the two Power Supplies. The Power-On LED will become green.
6. In the RAID Management software of the Host Server, verify that the Expansion Chassis and its disk drives has been detected.

### 2.3.1 Single Expansion Chassis Configuration

**SAS cable connected from SAS IN A port of Expansion Chassis to SAS RAID card on the Host Server**



Example of Management GUI on SAS HBA connected to single EP-2126J-S3S3 enclosure:

MegaRAID Storage Manager - v2.35-01

File Operations Group Operations Log Tools Help

LSI

Physical Logical

Server : localhost

PERC 6/E Adapter (Bus 5,Dev 0)

Enclosure 1 (ID 36)

- sas Physical Drive 156 : 476940.0 MB
- sas Physical Drive 157 : 476940.0 MB
- sas Physical Drive 158 : 476940.0 MB
- sas Physical Drive 159 : 476940.0 MB
- sas Physical Drive 160 : 476940.0 MB
- Battery Backup Unit

Properties

Host Name	localhost	IP Address	127.0.0.1
Operating System	Windows XP	OS Version	5.1
OS Architecture	x86		

ID Error Level Date / Time Description

3 [Information,...] 2008-06-10, 22:54:33 Successful log on to the server User: administrator, Client: 127.0.0.1, Access Mode: Full, Client Time: 2008-06-10,22:54:32

2 [Information,...] 2008-06-10, 22:40:15 Successful log out from the server User: administrator, Client: 127.0.0.1, Client Time: 2008-06-10,22:40:15

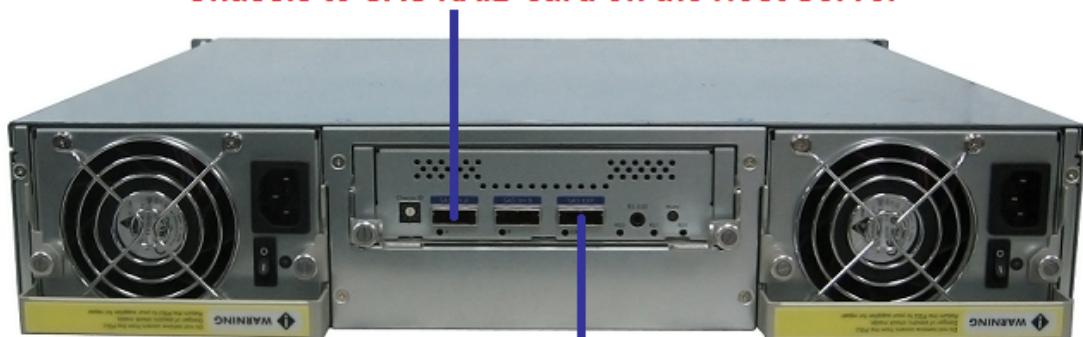
1 [Information,...] 2008-06-10, 22:40:05 Server log cleared User: administrator, Client: 127.0.0.1, Client Time: 2008-06-10,22:40:05

Displaying log from server

### 2.3.2 Two Expansion Chassis in Daisy-Chain Configuration

**First Expansion Chassis**

**SAS cable connected from SAS IN A port of Expansion Chassis to SAS RAID card on the Host Server**

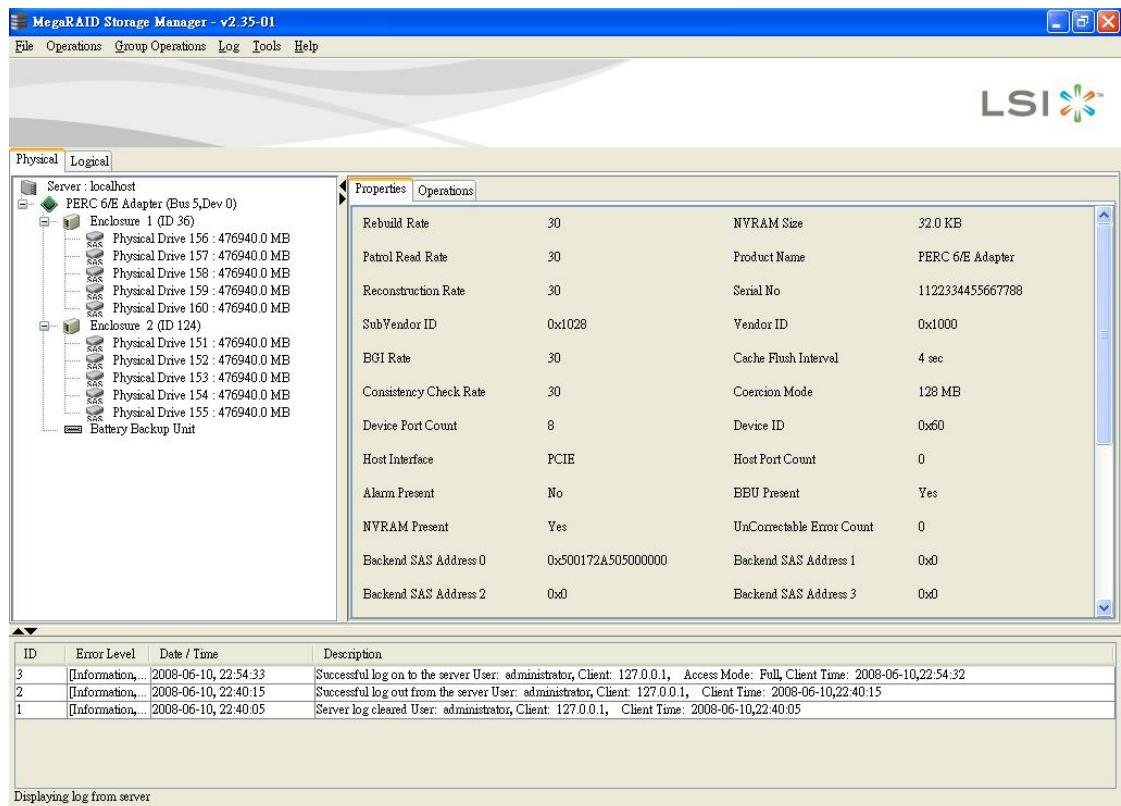


**SAS cable connected from SAS Expansion port of 1st Chassis to SAS IN A port of 2nd Chassis**



**Second Expansion Chassis**

Example of Management GUI on SAS HBA connected to two EP-2126J-S3S3 enclosures in daisy-chain configuration:



## Chapter 3 SAS JBOD Activate Zone Function



If Zone Function is activated, you cannot connect other JBOD Expansion Chassis.

In Zoning, the Disk will be divided into two separate groups. In 12-bay, the first group will be slot 1-6 can only be seen on Input 1. The 2nd group will be slot 7-12 can only be seen on Input 2.

FUNCTION	COMMAND
Get Zoning Status	phyzone get all
Activate Zoning	phyzone set activate all
Clear Zoning	phyzone clr all

### Get Zoning Status:

#### 1. phyzone get all:

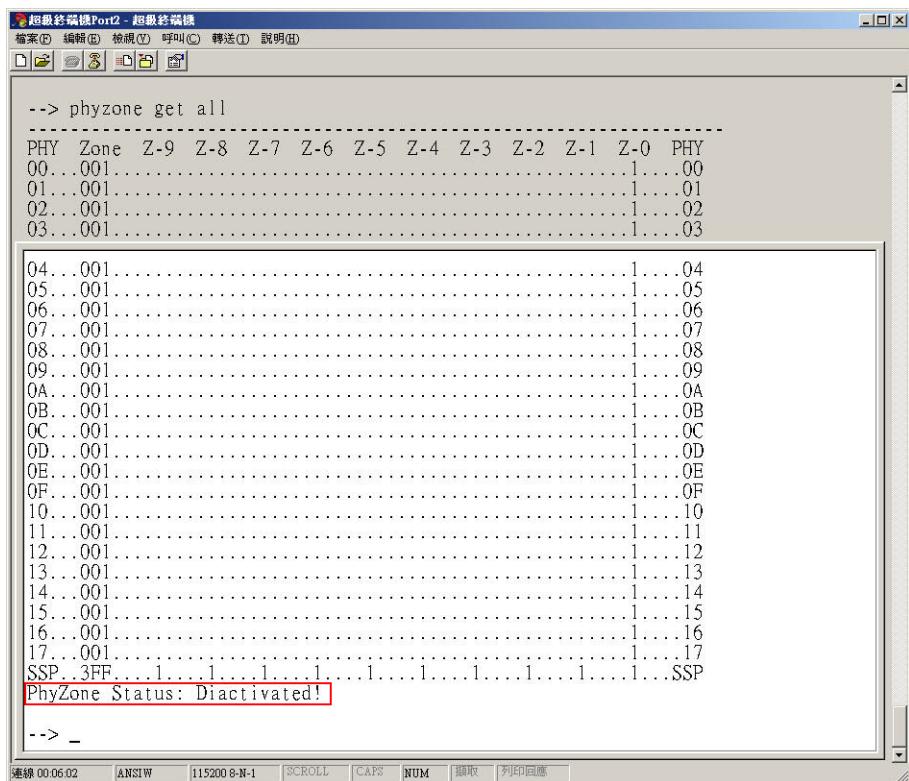
Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input “**phyzone get all**”, than press “**enter**”.

```

超級終端機Port2 - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(D) 說明(H)
D F G H I L M N P Q R S T V W Y Z

Phy Zone Value: 3FF
PhyZone Status: Dactivated!
--> Handle INQUIRY OK
Handle INQUIRY OK
--> system info
Big endian
I2cSepCmd size=0110,UartInfo size=013C
SysInfo size=00000B2C
12Bay system
Power num:02,fan num:02
Fan num/per power:01
Buzzer E:00,S:00
=====
ChassisId:00
DIP SW:0C
RaidCardId:03
Expander F/W V 1.1.7J
VendorID:PROWARE
Model:SAS JBOD
==== Build time:Jul 26 2009 21:05:17 ====
--> phyzone get all

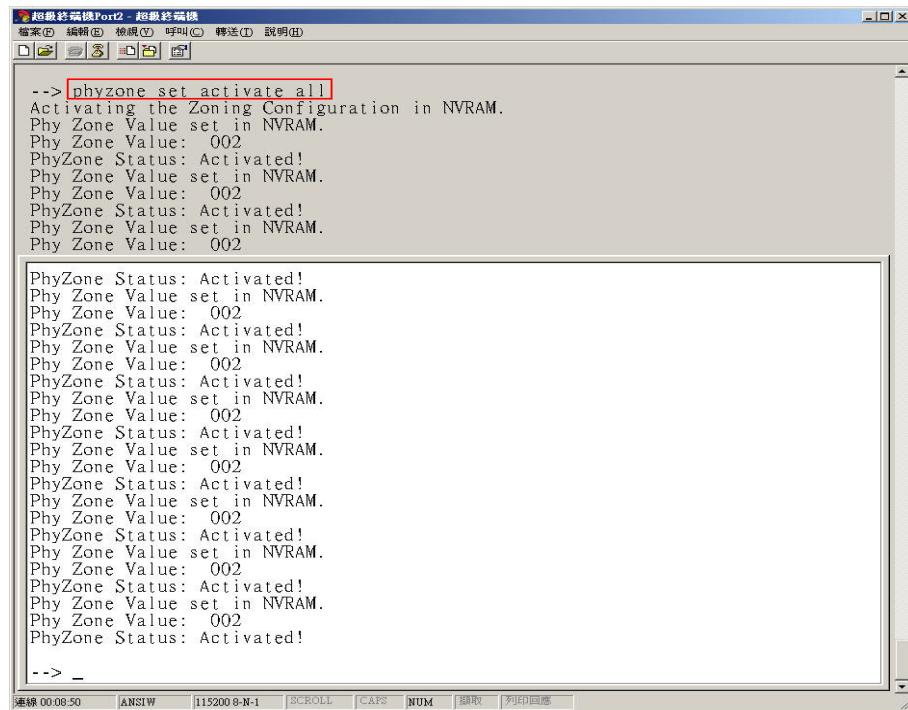
```



## **Activate Zoning:**

### **1. phyzone set activate all:**

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line input “**phyzone set activate all**”, than press “**enter**”.



## 2. phyzone get all:

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input “**phyzone get all**”, than press “**enter**”.

超級終端機 Port2 - 超級終端機

檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(I) 說明(H)

--> phyzone get all

PHY	Zone	Z-9	Z-8	Z-7	Z-6	Z-5	Z-4	Z-3	Z-2	Z-1	Z-0	PHY
00	..001										1	..00
01	..001										1	..01
02	..001										1	..02
03	..001										1	..03
04	..001										1	..04
05	..001										1	..05
06	..002										1	..06
07	..002										1	..07
08	..002										1	..08
09	..002										1	..09
0A	..002										1	..0A
0B	..002										1	..0B
0C	..001										1	..0C
0D	..001										1	..0D
0E	..001										1	..0E
0F	..001										1	..0F
10	..002										1	..10
11	..002										1	..11
12	..002										1	..12
13	..002										1	..13
14	..001										1	..14
15	..001										1	..15
16	..001										1	..16
17	..001										1	..17
SSP	..3FF	..1	..1	..1	..1	..1	..1	..1	..1	..1	..1	..SSP

PhyZone Status: Activated!

-->



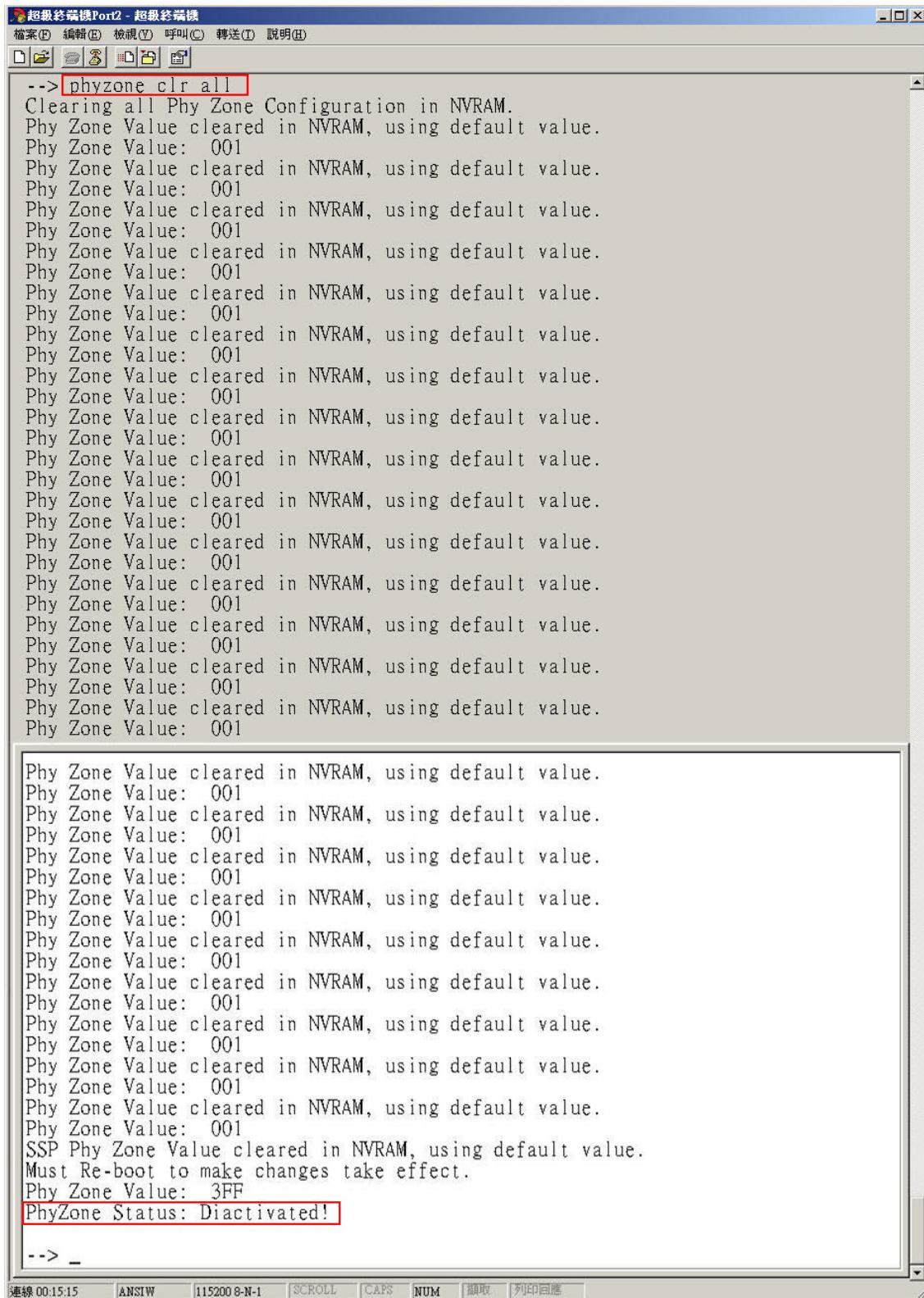
**Note: LCD Panel will showing “Zone Status: On”.**



## **Clear Zoning:**

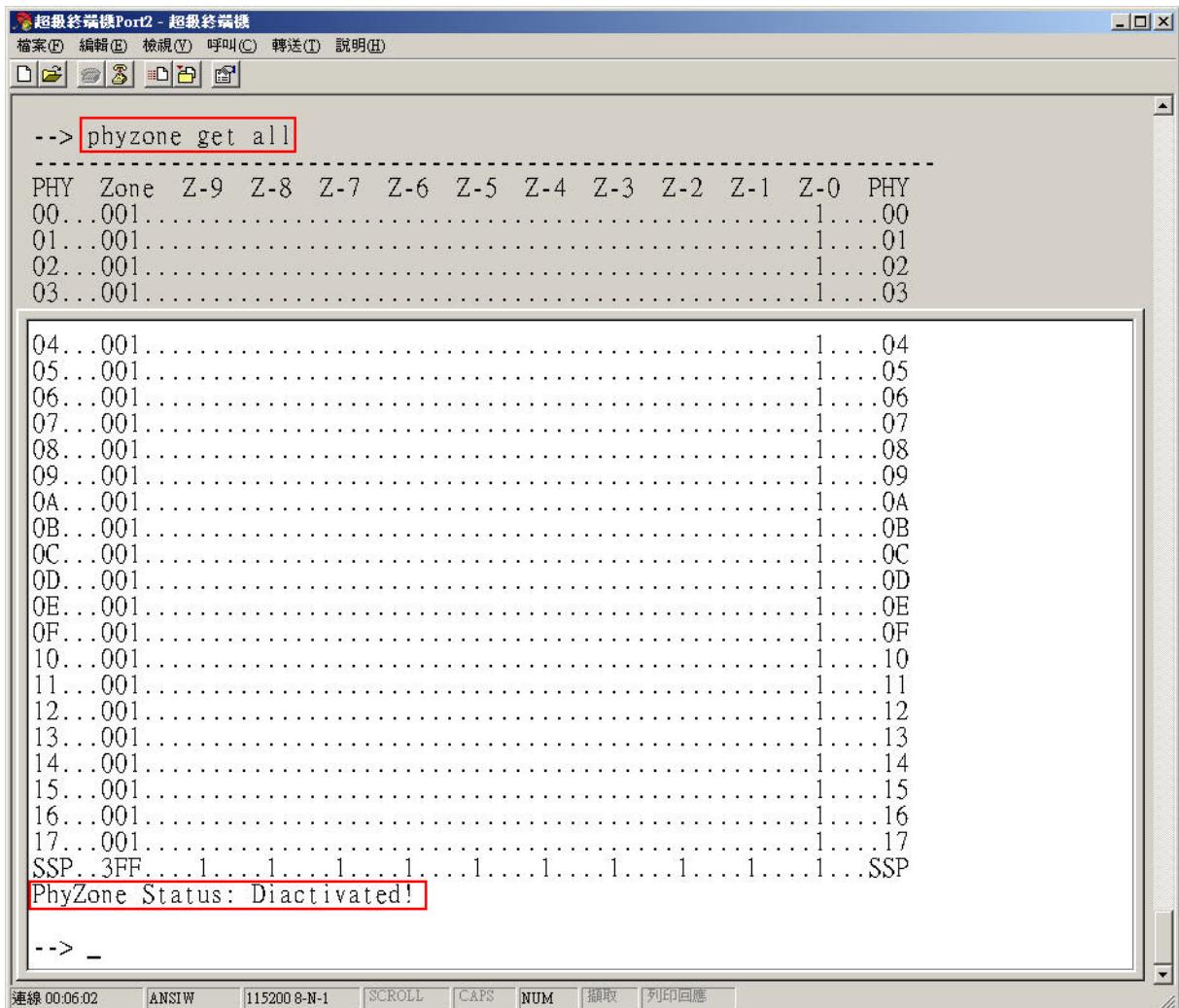
## 1. phyzone clr all

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line input “**phyzone clr all**”, than press “**enter**”.



## 2. phyzone get all:

Used RS-232 Port (Phone jack to DB9) link SAS JBOD, in command line please input “**phyzone get all**”, than press “**enter**”.



Note: LCD Panel will showing "Zone Status: Off".

